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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.     | CONFIRMATION NO. |
|--|-------------|----------------------|-------------------------|------------------|
| 09/516,257   | 02/29/2000  | Arthur G. Doak       | N-4699                  | 1822             |
| 23456  | 7590        | 09/10/2004           | EXAMINER<br>NGUYEN, TUT |                  |
| WADDEY & PATTERSON<br>414 UNION STREET, SUITE 2020<br>BANK OF AMERICA PLAZA<br>NASHVILLE, TN 37219 |             |                      | ART UNIT<br>2877        | PAPER NUMBER     |

DATE MAILED: 09/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                          |                  |
|------------------------------|--------------------------|------------------|
| <b>Office Action Summary</b> | Application No.          | Applicant(s)     |
|                              | 09/516,257               | DOAK ET AL.      |
|                              | Examiner<br>Tu T. Nguyen | Art Unit<br>2877 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 04 June 2004.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-65 and 84-88 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 43-65 and 84-88 is/are allowed.
- 6) Claim(s) 1-9, 12-16, 21-28 and 30-37 is/are rejected.
- 7) Claim(s) 10, 11, 17-20, 29 and 38-42 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. _____.   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

## DETAILED ACTION

The indicated allowability of claims 1-65,84-88 is withdrawn in view of the newly discovered reference(s). Examiner would like to apologize for all the inconvenience. Rejections based on the newly cited reference(s) follow.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,12,15-16,21-28,30-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khalfan (6,335,501) in view of Terashita (4,830,501) and Hiroshi et al (JP 11-084745).

With respect to claim 1, Khalfan discloses a system for sorting paper. The system comprises: a conveyor system (column 2, lines 40-42), analyzing the color of the paper (abstract). Khalfan does not disclose determining a glossy and a printed material. Hiroshi discloses a system for determining a glossy paper 114 (fig 2b) and Terashita discloses a system for sorting printed material (abstract). It would have been obvious to combine Khalfan with Hiroshi and Terashita to determine a plurality of characteristics of the paper at the same time to save the sorting time.

With respect to claim 12, refer to discussion in claim 1 above. Further Khalfan discloses the claimed sorting mechanism (fig 4).

With respect to claims 15-16, the claimed human interface system would have been known. It would have been obvious to modify Terashita with the known human interface system to select pre-defined options to facilitate the measuring.

With respect to claims 21,30, Terashita discloses the claimed detector for identifying differences in intensity of the reflected light (abstract).

With respect to claims 22-23, Terashita does not disclose the claimed cylindrical bore. However, it would have been obvious to modify Terashita with the claimed bore to direct the light to different path for using the system in different environments.

With respect to claims 24-25, refer to discussion in claim 1 above. Further, it would have been obvious to modify Terashita with different conveying speeds for using the system in different environments or testing different types of papers.

With respect to claim 26, Terashita discloses using a fiber bundle for the sources. It would have been obvious that the fiber bundle would have the same function as the claimed multiple light sources. Terashita does not explicitly disclose a plurality of visible lights of different wavelengths. However, Khalfan discloses using a tungsten halogen lamp (abstract). It would have been obvious that the halogen lamp having a plurality of

different visible wavelengths. It would have been obvious to modify Terashita with Khalfan's lamp for measuring the printed material more accurate.

With respect to claim 27, Hiroshi discloses measuring the claimed glossy paper.

With respect to claim 28, Terashita discloses analyzing the claimed printed surface.

With respect to claim 31, refer to discussion in claim 1 above for the sorting method and claim 26 above for illuminating the paper with different wavelengths. Further, Terashita discloses the claimed analyzing color step by detecting the paper's reflectivity of different wavelengths (abstract).

With respect to claims 32-37, it would have been obvious to modify Khalfan with different type of light sources or using different method for computing the measured values for different testing purposes. The modification involves only routine skill in the art.

Claims 2-9, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khalfan (6,335,501) in view of Terashita (4,830,501) and Hiroshi et al (JP 11-084745) and Owen (5,900,943).

With respect to claims 2-3, Terashita does not disclose a logic map and determining the characteristics of the paper by comparing the measured parameters to the map. Owen discloses a system for identifying characteristics of paper by comparing the measured parameters to a look-up table (abstract). It would have been obvious to modify Terashita with Owen to facilitate the measuring. Further, it would have been obvious to one ordinary skill in the computer art that Owen's look-up table performs the same function as the claimed logic-map.

With respect to claim 4, Terashita discloses using a fiber bundle for the sources. It would have been obvious that the fiber bundle would have the same function as the claimed multiple light sources.

With respect to claims 5-9,13-14, since the values contained in the claimed logic-map are predefined for identifying different characteristics of the paper, it would have been obvious to modify the predefined values in Owen's lookup table to measure certain characteristics of the paper. The modification involves only routine in the art.

***Allowable Subject Matter***

Claims 43-65,84-88 are allowed.

Prior arts of record do not disclose a method for analyzing a color of a moving object. The method comprises: sequentially interrogating the inspection zone with multiple light sources of different light wavelengths as the object moves within the

inspection zone, the interrogation including a first series of sequential flashes of the multiple light sources in a first order, followed by a second series of sequential flashes of the multiple light sources in a second order which is the inverse of the first order which structurally arranged and functionally operated as claimed in claim 43.

Prior arts of record do not disclose a paper sorting apparatus. The apparatus comprises: a light transmitter including an array of red lights, an array of green lights and an array of blue lights, each array being spaced across the width of a conveyor; and a light receiver for receiving light reflected from paper in the inspection zone, the light receiver including an array of sensors spaced across the width of the conveyor, each sensor receiving light reflected from an area defining one pixel of the paper which structurally arranged and functionally operated as claimed in claim 53.

Prior arts of record do not disclose a method for sorting paper. The method comprises: (c) reflecting light from a mirror onto the inspection zone and off paper in the inspection zone back to the mirror; receiving light from the mirror in an array of sensors which sensors generate signals corresponding to characteristics of the paper in the inspection zone; moving the mirror to a normalization position wherein light from the array of light sources is reflected from the mirror onto a reference surface; and normalizing outputs from the array of sensors with reference to light reflected of the reference surface which structurally arranged and functionally operated as claimed in claim 84.

Claims 10-11,17-20,29,38-42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior arts of record do not disclose the method including step measuring an intensity of reflected light reflected from the paper and originating from first and second light sources of the same color light, the first and second light sources being differently oriented so that the measured reflected light from the first source is diffuse reflected light and the measured reflected light from the second source is directly reflected light which structurally arranged and functionally operated as claimed in claims 10,20,29 in combination with all the limitations of the base claims.

With respect to claims 17,38, refer to discussion above in claim 43 for the reason for allowance.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tu T. Nguyen whose telephone number is (571) 272-2424. The examiner can normally be reached on T-F 7:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley Jr. can be reached on (571) 272-2800 Ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tu T. Nguyen  
Primary Examiner  
Art Unit 2877

09/04/2004